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ASSOCIATION

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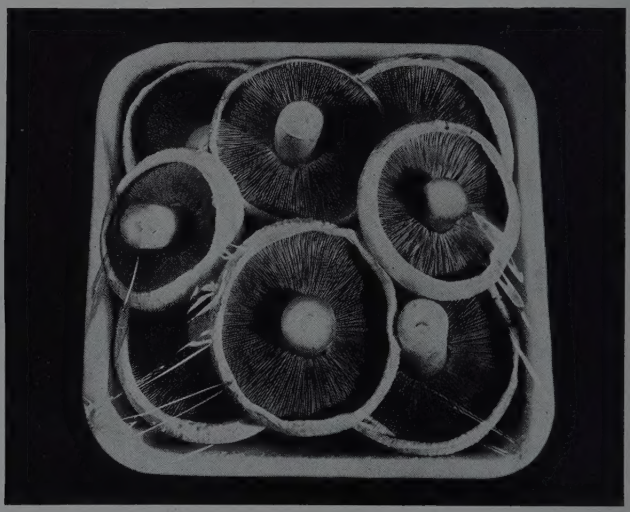

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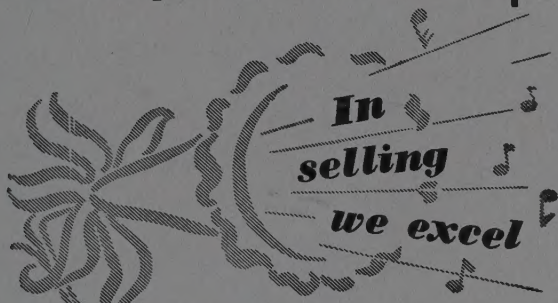

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EDITORIAL

IT'S HERE

" It is as fatal as it is cowardly
to blink facts because they are
not to our taste."—*John Tyndall.*

This year, a month before the usual time, mushroom prices on the wholesale markets flopped to a near all time low and many, far too many growers found their price returns something under cost of production.

It is of course absolutely true that around June-July time each year and especially when these two months are accompanied by a spell of real warm weather, prices have dipped before but not so early and not to the extent of this year.

The main cause, purely and simply, is over production, one of the two main bogeys—the other is a shortage of horse manure—which for many many years has raised its ugly head throughout the industry. Up to now the danger has always been in the air as it were, something in the future but not in the present. To-day it is quite different.

The cause of this over production cannot, in all fairness, be laid at one particular door whilst admittedly the Linfield organisation have stepped up production in a stupendous fashion other growers too, large and small, have also increased their basic mushroom growing areas. So, in the end, the production has snowballed.

All this has been the result of fair competition—it is as well to remember that particular point.

What is really wanted to-day is orderly production and orderly marketing and not a state of affairs where the law of the jungle and the survival of the fittest is the be all and end all of everything. Not for one moment do I suggest that the inefficient producer should be wet nursed by his more efficient competitor but what I do suggest, even amongst the most efficient growers is co-operation on the widest possible field, a sense of responsibility to themselves and to the industry in general when it comes to expansion, and the realisation that, no matter how much is spent on publicity and how hard individual members of the MGA may work to make publicity efficient, a great deal of time is bound to elapse before the general public sits up, takes notice and above all buys.

WRA

PIG MANURE AS A SUBSTITUTE FOR HORSE MANURE IN MUSHROOM GROWING

C. RIBER RASMUSSEN

The Royal Veterinary and Agricultural College, Copenhagen, Mushroom Research Station

The cultivation of mushrooms (*Psalliota bispora*) is an expanding industry all over the world, and the annual production is estimated at about 100,000 tons.

The primary growing medium is still composted horse manure (fermented in one way or another), but as numbers of horses continue to decline and horse manure is already scarce in many countries, it is vitally important to find a substitute.

Many attempts have been made at preparing a " synthetic " compost, with straw as its base and with additions of various organic as well as inorganic chemicals. According to **Demolon,** 1935 (1), **Sinden,** 1938 (2) and **Lambert,** 1929 (3), **Stoller,** 1943 (4), satisfactory yields have been obtained. The latest formula was developed by **Dr. R. L. Edwards,** 1949 (5) (former director of the former Mushroom Research Station in England). This compost is named MRA and is used on a big scale by a number of growers in Europe and it ensures good cropping yields.

TABLE 1
Cropping Experiments
[1]Kilos of mushrooms per [2]sq. metre in 90 days
Shelves

	Horse manure " normal " + 50%	MRA	Brewers grains
1. exp.	22.2	16.2	13.1
2. exp.	18.6	11.3	11.3

Mushroom-strain: B.B.—26 (brown)

1. 1 kilo = 2.2 lb.
2. 1 sq. m. = 1.2 sq. yds. (approx.).

Comparative cropping experiments at the Danish Mushroom Research Station with MRA compost, synthetic brewers grains compost and horse manure compost showed that the MRA gave very good yields, but compared with horse manure prepared as usual for the station and supplemented with certain inorganic chemicals (6,7) the yield from MRA was rather low. (See table 1, p. 278); horse manure produced yields which were 40—70% higher than those from MRA.

Moreover, the cost of making MRA compost (at least in Denmark) is considerably higher than that of horse manure compost as big quantities of dried blood have to be used. In two experiments with increasing quantities of dried blood (as a percentage of the quantities normally

used in MRA), it proved that dried blood is very important for obtaining reasonable yields (see table 2, p. 279), but in conclusion it must be said that none of the synthetic composts could produce yields equal to those from horse manure compost.

TABLE 2

Cropping Experiments

Kilos of mushrooms per sq. metre in 90 days

Shelves

	Brewers grains 0% blood	Brewers grains 25% blood	Brewers grains 50% blood	MRA 100% blood	Horse-manure "normal" +75%
3. exp. ..	8.8	13.9	13.6	11.7	19.0
4. exp. ..	9.9	9.8	14.3	15.1	26.3

Mushroom-strain: B.B.—26 (brown)

In 1954, investigations were started at our station into the use of pig manure as a growing medium. In a preliminary experiment (experiment 1—see table 3, p. 280) very low yields were obtained, but this was probably due to inexperience and the fresh material being of poor quality. In the next experiment acceptable yields were obtained and in the subsequent trials when more experience had been gained still better results were obtained. In the 5th and 6th experiments the cropping yields were just as high or even higher than those obtained from horse manure compost.

THE OUT-DOOR COMPOSTING OF PIG MANURE

Quality of the fresh pig manure:

The correct choice of the fresh material seems to be far more important than for horse manure. In the preliminary experiment the pig manure originated from a farm where swill was used as a primary feed for the pigs. The manure therefore contained much bone residue, etc. Moreover little straw was used for bedding and this resulted in a very unpleasant fresh material. During composting vast numbers of maggots developed; these were obviously hatched in the bone residue, and the final compost was very different from fermented horse manure; it had a bad structure, sticky smell, and was extremely greasy. The compost did not improve after peak-heating (pasteurisation) and the cropping yield was poor (see table 3, p. 280).

In the second experiment the fresh manure came from a farm where the pigs were fed conservatively, i.e., milk, barley and roots. As similar amounts of wheat straw were used for bedding as in racing stables, the fresh pig manure looked much better and the final compost gave satisfactory cropping yields (see table 3, p. 280). According to this and later experiments the following remarks may be made about the quality of the fresh manure.

TABLE 3
Cropping Experiments
Kilos of mushrooms per sq. metre in 90 days
Shelves

	Horse-manure "normal" +50%	Horse-manure "normal" +75%	Pig-manure pure	Pig-manure "normal" (1)	Pig-manure "normal" +75%
1954 1. exp.	22.2			3.4	
1955 2. „	18.6			14.8	
1955 3. „		19.0		16.2	
1956 4. „		26.3		20.0	
1956 5. „		21.9	23.1		15.6
1957 6. „		18.7	18.4	17.2	18.9

Mushroom-strain: B.B.—26 and 30 (brown)
(1) "Normal"=Inorganic supplements per ton of fresh manure:
4 kilos sulphate of ammonia at stacking.
15 „ calcium carbonate at 1st. turn.
15 „ superphosphate } at 2nd. turn.
4 „ gypsum }

Swill must not be used for feeding. The quantities of wheat straw used for bedding must be equal to or even a little greater than those used for racing horses. It would be preferable to use so much straw for bedding that a moisture percentage of about 50 was achieved. According to the nature of the pigs the manure is often much shorter than racing stable manure. As pig manure heats very quickly and easily burns into rather small hard lumps, it is an advantage to protect the fresh material against rain during the storage period, which should be as brief as possible. Compared with horse manure the fresh pig manure is much more unpleasant and has a typical sticky smell. Generally the fresh pig manure feels more greasy.

Composting/turning schedule

In all experiments the same turning schedule was applied as that used for horse manure, namely 0—6—10—13—15—16 which means that the fresh manure was stacked on day 0, 1st turn made on day 6, 2nd on day 10 and the 3rd turn on the 13th day. The compost was shaken up on the 15th and filled into the beds on the 16th day after stacking.

Stacking:

At the station the fresh horse manure is generally stacked in piles which are 160 cm. wide and 150 cm. high. During stacking the pile is gradually consolidated very hard and large amounts of water are applied. This is very important as it ensures that the straw absorbs sufficient water for proper fermentation (30cm. = 1 ft).

In pig manure the technique is quite different. Only very small amounts of water should be added. Table 4, p. 281, shows the quantities of water used in a series of experiments compared with those used for horse manure.

TABLE 4

I. Amounts of Water—in Litres—added per ton of Fresh Manure during the Outdoor Composting

II. Moisture Percentage before Stacking, at Filling, and after Peak-Heating

I.

Experiments	3.		4.		5.		6.	
Manures ..	Pig-manure	Horse-manure	Pig-manure	Horse-manure	Pig-manure	Horse-manure	Pig-manure	Horse-manure
At stacking ..	67	450	104	603	14	585	42	617
1. turn ..	25	60	61	92	25	100	47	94
2. turn ..	18	68	56	62	10	19	8	8
3. turn ..	10	16	8	8	20	8	2	0
At shake up	7	20	0	0	0	0	0	0
Total	128	614	229	765	44	712	99	719

II.

Moisture percentage before stacking	64	55	55	54	60	58	52	51
Moisture percentage at filling	66	67	66	69	69	68	68	69
Moisture percentage after peak-heating	66	66	?	?	64	62	?	?

* 1 Litre = approx. 1¾ pints.

It will be seen that only from about 5—20% of the amounts used for horse manure are needed for pig manure although both types initially have the same moisture content at stacking. Moreover the table shows that the moisture percentage at filling is about even for both composts. The figures clearly show that the fermentation process for pig manure is different from that of horse manure. However, more detailed investigations must be carried out to solve the microbiological and chemical variations between the two types of compost.

Due to the shortness of the fresh manure and its ability to heat very quickly it seems to be important *not* to make the piles too wide or too high at stacking. In the experiments the piles were 140 cm. wide and 130 cm. high. Only the sides of the piles were gently pressed with the back of the manure fork and the centre was kept as loose as possible; sufficient air-penetration through the compost during fermentation is essential. By making the heaps of pig manure too big and tight the air is excluded and anaerobic fermentation starts, due to too low a temperature. As against this, the correct stacking and watering technique results in excellent fermentation and produces high temperatures very fast. On the other hand, it is evident that pig manure piles shrink rapidly during composting (especially between stacking and 1st turn); this causes a lack of air penetration and leads to a subsequent fall in the temperature in the heap.

As the biggest difference between pig manure and horse manure composting lies in the water applied, great attention must be paid to that part of the process. As previously mentioned very small amounts of water are added (see table 4, p. 281). If too much water is used for pig manure the air is excluded even more. The final compost becomes very greasy and will be an unsuitable medium for mushroom mycelium. Correct watering of pig manure requires much care and practice.

1st turn

At the 1st turn only a very narrow " fire fang " zone has generally developed (the formation of actinomycetes). In the lower middle one anaerobic yellowish manure is often seen, but on the whole the manure has already turned dark brown and is usually much darker than horse manure at the same turn. The smell is not at all pleasant. Due to the condensation the upper layer (20 cm.) is almost slimy. In order to avoid getting this layer to the bottom, when the turning starts, it is just forked off and placed in a separate pile and later gradually mixed into the rest of the pile. Before starting the turning, sufficient manure is taken out from the well-fermented compost in the fire fang-zone to build up the first 20 cm. of the bottom layer in the new pile. At the same time compost is taken out to be used for finishing off the top 20 centimetres of the heap. This procedure is used for all turnings. At the 1st and later turnings the new pile is kept at a width of 135 cm. and maintaining the original height.

When the compost is turned the water required is added, but as the quantities to be used should be even less than at stacking (table 4, p. 281) great care must be taken. At the 1st turn the pH of the compost

is high (8.2—8.5) and much ammonia is released. The straw is often very greasy and not easy to break.

2nd turn

Also between the 1st and the 2nd turn fairly little fire fang is formed but at the 2nd turn no anaerobic compost is usually seen. The colour has got even darker although much light-coloured straw may be observed. The unpleasant smell has practically disappeared but the compost has a special odour quite different to horse manure compost. The straw breaks more easily but compared with horse manure the straw is still very greasy.

3rd turn

At the 3rd turn the pig manure compost (13 days after stacking) has reached a stage when it resembles horse manure compost very closely. It is, however, considerably shorter but has a satisfactory structure. The fire fang formation is now evenly distributed all through the compost. The typical pig manure smell has disappeared completely. The straw is easily broken.

At shake-up

In all the experiments the compost was shaken up on the 15th day (2 days after the 3rd turn). The "greasiness" prevailed—even in treatments with chemicals added (see table 3, p. 280), and usually the compost was not as homogeneous as horse manure compost, in respect of colour, but the final product was satisfactory in appearance.

These adversities are probably due to difficulties in adding the correct quantity of water to the small dry spots during the composting process. But even in the latest experiments—after more experience has been gained—and with a comparatively good compost at the time of shake-up, it may be said that one would not expect cropping yields from pig manure to be as high as those from horse manure.

Filling:

On the 16th day after stacking the compost was filled into the beds. With the composting methods usually applied at the station for horse manure compost, 12—13 square metres [1](80 kilos[2] compost per square metre bed area) are laid down per ton of fresh horse manure but for pig manure only about 8 square metres (80 kilos each) were filled per ton of fresh pig manure material. Also in this respect pig manure differed from horse manure compost. The cause for this is not readily understood and more investigations are required. The problem must be taken into consideration when the price to be paid for pig manure is calculated.

1. 1 Kilo = 2.2 lb.
2. 2½ sq. m. = 3 sq. yds (approx.).

It is the experience at the station that the compost must not be packed too tightly in the beds or trays at filling due to the greasiness of the compost.

Peak-heating (pasteurisation)

The peak-heating technique normally applied for horse manure compost was also used for pig manure. Generally peak-heating temperatures (57—60° C. in the compost) are reached by means of hot-water

pipes supplemented with live steam from a steam boiler. Normally 15—20 hours were required until peak-heating temperatures were reached and the temperature has been maintained for 55—70 hours in the compost according to conditions prevailing. Apart from the preliminary experiment in which it was impossible to control the temperature (the beds heated up to 73—74° C.) the pig manure compost did not cause difficulties during peak-heating. The normal amounts of fresh air were introduced throughout the process.

A very good fire fang formation is generally seen after pasteurisation. The moisture percentage usually declines more than for horse manure (see table 4, p. 281). The greasiness, however, still prevailed, although some disappeared during the peak-heating, but it must be emphasized that the pasteurisation process is extremely important in order to obtain good yields with pig manure compost. An increase in yield of more than 100% has been recorded in comparison with non-peak-heating.

EXPERIMENTS WITH INORGANIC SUPPLEMENTATION

In a series of experiments carried out at the station it was proved (6,7) that certain quantities of inorganic chemicals (mentioned in table 3) added to horse manure during the out-door composting has resulted in a highly significant increase in the total cropping yields.

These chemicals were tested in pig manure in several of the experiments but resulted either in a decrease in yield or had no effect. See table 3, p. 280. This also shows the difference between pig manure and horse manure composts.

GENERAL REMARKS

In all experiments brown mushroom strains were used (B.B. Nos. 26 and 30). The casing material was a sandy soil rich in humus (pH 7.6). Other cropping techniques did not differ from those usually applied for horse manure compost.

CONCLUSION

Pig manure compost is a suitable growing medium for mushroom cultures. Further investigations will most likely lead to even better results.

The choice of the fresh material is important. Much straw must be used for bedding. The storing time ought to be reduced to a minimum.

As against experience gained with horse manure only very little water is needed for pig manure during the outdoor composting.

The compost often gets greasy. The peak-heating process is extremely important.

SUMMARY

Horse manure compost, synthetic compost and pig manure compost were included in six comparative cropping experiments with growth media for mushroom cultures. Owing to inexperience and the choice of unsuitable material, very low cropping yields were obtained from pig manure compost in the first experiments, but with more

experience and choice of more suitable pig manure in the following experiments larger and larger yields were obtained (considerably larger than from synthetic compost). In the 5th and 6th series of experiments yields from pig manure were even larger than those from horse manure.

Pig manure can therefore be considered a suitable growth medium and a good substitute for horse manure.

Pig manure heats very easily but the piles shrink quickly and exclude the air with resulting anaerobic fermentation. Pig manure needs only small amounts of water during composting as compared with horse manure but, nevertheless, the final product is much more greasy than horse manure compost. Whilst normally 12—13 square metres of beds are filled per ton of fresh horse manure only about 6 square metres were filled per ton of fresh pig manure. Peak-heating (pasteurisation) of the compost before laying down the mushroom mycelium is vitally important for obtaining good cropping yields.

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FANCY THAT!

Screwy: Christmas decorations made of coloured corkscrew foil which hang by a thread from the ceiling and wind and unwind, according to the upward or downward movement of the air, are being used by mushroom growers to show whether air flow in their houses is too much or too little. *Auckland Weekly News, New Zealand.*

Heavenly Mushrooms (with apologies to the A.M.I.): Enormous mushrooms have been discovered in the choir stalls of St. James' Church, Alperton and, investigating the cause, the Vicar, the Rev. R. J. Bartlett discovered the dry rot had destroyed the entire choir platform. *Wembley News.*

Wild Prices: Earlier this year (in March) wild mushrooms were making anything between 3/- and 7/- per lb. at Christchurch, New Zealand. They appeared a month earlier than usual and, once in the shops, the demand was so great that supplies had been exhausted by afternoon. *Christchurch Press, New Zealand.*

What Next? I shall be very much pleased if you can direct me to importers of dried ginger.

From a would-be mushroom grower in Ghana, West Africa.

WORLD'S PRESS DIGEST

The Irish invasion is keeping down the **prices**, although the quality is not so good and they seem to deteriorate in transit (*Grower* April 19/58). Many mushrooms have been sent, but sales were poor (*Nurseryman Seedsman*, April 24/58). Mushrooms fell badly this week (*Grower*, April 26/58). Mushroom demand did not match the large supplies (*Nurseryman Seedsman*, May 1/58). Mushrooms were not being asked for, and there were insufficient buyers for the heavy arrivals (*Nurseryman Seedsman*, May 8/58).

Dehydrated fruit and vegetables, as good as anything canned or frozen, and often practically indistinguishable from fresh food, are being produced at the Ministry of Agriculture experimental factory in Aberdeen. H. G. Schaffer, in *Grower*, March 22/58.

In an average **clay** or silt loam in good structure, the pore space makes up approximately 50 per cent. of the total volume of a soil, said Professor A. C. Richer. We must remember that mushrooms are aerobic; they need oxygen. AMI's *Mushroom News*, April/58.

Five commonly used fertilizer solutions caused only insignificant **corrosion** of a variety of metals; it was greatest in all cases with cast iron and steel bar, while with the eloxidized aluminium no losses at all were observed. (W. E. Fischer-Schlemm and W. Krepela in *Landtech. Forsch.*, Munich, 1957, 7.)

Agricultural and Horticultural Engineering Abstracts, 1958, 2.

The washing-packaging trend has arisen as a matter of practical necessity in an air of heightening competition for a larger share in the food dollar. We expect to see groups of six, eight or ten growers build their own washing and packing plants to spread out the cost and make for a more efficient operation. AMI's *Mushroom News*, April/58.

Material is fed by drag link chains running in the bottom of a trough to a 3′ 6″ dia. lacerator and discharged through 10½″ dia. ducting. (The Brodr. Taul, Vejle **chopper** blower, model TE 102.)

Agricultural and Horticultural Engineering Abstracts, 1958, 2.

Freedom from **dust** is claimed by the use of White A.D. Tack Rag material over open windows, air ducts, etc. Completing dust prevention is the Taccy Door Mat which removes dust from shoe soles without making shoes tacky. *Scope*, May/58.

The Floralene **air-purifying unit**, which is said to remove harmful ethylene gas from the atmosphere, has been developed by Tack Air Conditioning Ltd. *Grower*, April 26/58.

In Brighton and Hove the sale of **canned mushrooms** is soaring. One retailer has sold as many cans in the last few weeks as he has done in 25 years previously.

Brighton and Hove Gazette, May 3/58.

The formation of an **international society for horticultural science** was proposed at the 15th International Horticultural Congress in Nice. Government departments, representatives of horticultural societies, and

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individual horticulturists would be eligible for membership. It would collect and distribute scientific information on horticultural developments. *Fruit Trades' Journal*, April 19/58.

Britain, the world's largest exporter of agricultural machinery, will soon give another lead by establishing a college of **agricultural engineering.** A site near Bedford has been chosen.

Daily Telegraph, May 6/58.

The V-Notch **Chlorinator** type BA-711 from Wallace and Tierman Ltd. incorporates a new concept in chlorine flow control—the V-notch variable orifice. Basic price, including delivery and erection, is £525.

Scope, May/58.

The new moisture-resistant **hardboard** introduced by Bakelite Ltd. is intended for surfacing walls, ceilings, flush doors and partitioning where the atmosphere is steamy or damp. Standard sheets measure 8 ft. by 4 ft. by $\frac{1}{8}$ inch and cost 3s. 4d. per sq. ft. *Scope*, May/58.

I found the Liverpool salesmen even more emphatic than those of other markets on the need for first-class **grading** and packing.

H. G. Schaffer in *Grower*, April 19/58.

One market firm is now issuing **coloured covers** for chip baskets. Blue represents buttons, red cups, and green opens. It is very useful when sorting out the mushrooms early in the morning.

Grower, April 26/58.

Since 1939, British mushroom **production** has rocketed tenfold to more than 40 million pounds a year, valued at over £7 million; more than 400 growers in every part of Britain are estimated to have invested another £7 million in building and plant. Alec Blacke and Harland Manchester tell the story of mushrooms through history and the modern cultivated mushroom industry.

Reader's Digest, May /58.

Several major U.S. food-processing firms plan to begin using a stemless mushroom, **produced in vats,** within the next six months as an ingredient in soups and other commercially packaged foods. The new mushroom may also be offered to the public in dried, frozen, fresh or canned form within a year. *Financial Times*, May 9/58.

Production costs have continued to outstrip returns, and the NFU, in its latest analysis of horticultural accounts, is wise in emphasising that this trend is still going on. Profits are almost certain to continue in a downward graph on most holdings.

Viewpoint in *Commercial Grower*, May 9/58.

COPENHAGEN, 1959

The International Commission of Mushroom Science is now affiliated to the Botanical Section of the International Union of Biological Sciences. May we remind all members that the Fourth International Conference on Mushroom Science will be held in Copenhagen from 18th to 25th July next year?

BOURNEMOUTH, 1958

Are you one of the critics?

On various occasions in the past the conditions governing the mushroom competitions at the Annual Conference and Exhibition, which this year takes place at Bournemouth on 1st and 2nd October, have been the target for some criticism.

In an effort to improve, if possible, these conditions, the Exhibition Organising Sub-Committee invite all members to carefully examine the schedule set out below and to make suggestions for alterations, to the MGA Secretary, not later than 18th July. All suggestions will receive careful consideration.

SCHEDULE OF CLASSES

(*All cups are Challenge Cups and CANNOT be won outright.*)

Class 1. **THE MGA CUP.** Open to members of the MGA only. For the best three chips of WHITE BUTTONS packed 3 lb. in a chip.
1st prize £5 and a miniature cup; 2nd prize £3; 3rd prize £1.
The MGA Challenge Cup is presented by Messrs. HARDING BROS., of Tenterden.

Class 2. **THE MOUNT CUP.** Open Competition.
For the best chip of WHITE BUTTONS packed 3 lb. in a chip.
1st prize £3 and a miniature cup; 2nd prize £2; 3rd prize £1.
The Mount Cup is presented by Messrs. MOUNT & SON, Canterbury, makers of Mount Spawn.

Class 3. **THE BROOME & GREEN CUP.** Open Competition.
For the best chip of WHITE CUPS packed 2½ lb. in a chip.
1st prize £3 and a miniature cup; 2nd prize £2; 3rd prize £1.
The Cup is presented by Messrs. BROOME & GREEN of Covent Garden.

Class 4. **THE SMART CUP.** Open Competition.
For the best chip of WHITE OPENS packed 2 lb. in a chip.
1st prize £3 and a minature cup; 2nd prize £2; 3rd prize £1.
This Cup and Miniature is presented by Messrs. PASK, CORNISH & SMART of Covent Garden.

Class 5. **THE THWAITES CUP.** Open Competition.
For the best two chips of mushrooms, one containing not less than 3 lb. WHITE BUTTONS and the other containing not less than 2½ lb. WHITE CUPS.
1st prize £3 and a miniature cup; 2nd prize £2; 3rd prize £1.
The Thwaites Cup is presented by the late JOHN THWAITES, Esq.

Class 6. **THE STABLE MANURES CUP.** Open only to growers of a cropping area under 10,000 sq. ft., for the best 2 chips of mushrooms, one containing 2½ lb. of WHITE CUPS and one containing 2 lb. of WHITE OPENS.
1st prize £3 and a miniature cup; 2nd prize £2; 3rd prize £1.
The Stable Manures Cup, with replica, is presented by Messrs. STABLE MANURES LTD., of Newmarket and Worthing.

Class 7. **THE T. J. POUPART CUP.** Open Competition.
For the best 3 chips of mushrooms. One containing 3 lb. each of WHITE BUTTONS, one containing 2½ lb. each of WHITE CUPS and one containing 2 lb. each of WHITE OPENS. **AS PACKED FOR MARKET,** with plain lid on and not identifying the exhibitor, no paper showing above the rim of the chip, i.e., no paper showing when the lid is on.
1st prize £3 and a miniature cup; 2nd prize £2; 3rd prize £1.
The T. J. Poupart Cup is presented by Messrs. T. J. POUPART LTD., of Covent Garden.

MUSHROOM PRODUCTION CANNING AND PRICES IN FRANCE*

Reduction in Production urged

The March/April Bulletin of the French Mushroom Growers' Federation reports a joint meeting of representatives of the growers and canners, held in March to discuss their mutual problems of over-production and low prices.

It was stated that the growers were alarmed by the announcement of the fall in price of mushrooms for canning, made a few days earlier; as a result many mushroom growers would be working at a loss. The canners representatives were asked to explain the reason for this price reduction, which they attributed to over-production and the large quantities of canned mushrooms which they were holding in stock. They had agreed on a joint publicity campaign with the growers, and to finance this the canners would contribute 100 francs per case of canned mushrooms to a publicity fund. Also they hoped that means would be found to finance the large stocks in hand so that they could be withdrawn from the market for a time.

On behalf of the growers it was stated that they envisaged four ways of improving the situation:

They would ask the spawn makers to charge a levy on each carton of spawn, to provide funds for publicity.

They would increase their publicity campaign.

They would urge the financial authorities not to give any financial support towards increasing production capacity under present conditions.

They would advise growers to reduce production a little, and to try to sell their surplus supplies in the fresh market.

It was suggested that a joint committee of spawn makers, growers, canners, and fresh market wholesalers should be set up, to meet every month to consider the immediate market prospects and take advance action to avoid price and production crises.

It was also pointed out that the collection of a levy on spawn would provide advance information about fluctuations in production (i.e., level of production 6—12 weeks after the spawn would be used). It would be wise for growers in the Centre and Bordelais districts to sell at least 10% of their production in ways other than for canning.

At the end of the discussion it was agreed:—

1. **to recommend the formation of an organisation to finance surplus stocks of canned mushrooms, which could benefit by the co-operation of the Mutual Guarantee Fund.**
2. **to persuade growers to reduce their production, informing them that from 1st June the canner would not take more than 80%**

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of their average intake for 1955-56-57. The canners estimated that the price would rise again as soon as supplies fell to the normal level.

3. **to oppose all requests for help (particularly financial) toward increasing production under present conditions.**
4. **to intensify publicity including as soon as possible full pages in colour in two leading magazines. For this purpose spawn makers were asked to collect a levy on all spawn, which would also be used partly to pay for the Federation's research programme. On the other hand the subscription per lamp (per employee) would be reduced. On their side the canners would subscribe to the publicity fund 100 francs per case of canned mushrooms produced.**
5. **to consider the formation of a joint committee responsible for reviewing continuously the market situation.**

*Translated from French Mushroom Growers Federation Bulletin by R. L. Edwards.

INTERNATIONAL PREPACKING EXHIBITION

The Publicity Committee has decided to stage an exhibit at the International Exhibition of Prepacked Fresh Fruit and Vegetables being held at the New Horticultural Hall, London, S.W.1, from 7th—9th October.

The Exhibition is the first of its kind to be held in Europe and is sponsored by the Ministry of Agriculture and organised by Produce Prepackaging Development Association Ltd. Delegates from 18 European countries have been invited to the International Conference on prepacking which is being held in London at the same time. The Minister of Agriculture, the Right Hon. John Hare, O.B.E., M.P., will open the Exhibition and has stated:—

" Developments in the prepacking of fresh fruit and vegetables in Britain in the past five years have suggested that this industry has great scope and potential.

More and more housewives to-day look for convenience and good quality first when they are shopping. That is what prepacking can help to give them.

The international exhibition sponsored by European Productivity Agency and my Ministry can be of real significance to all concerned with horticultural production and distribution both in the United Kingdom and on the Continent. I am sure the exhibition will merit their full support."

Major A. L. A. Dredge, of Combe Bank Market Gardens Ltd., Sundridge, Kent, who in company with his wife arranged the MGA exhibit at the Royal Show last year, has agreed to put up the MGA Stand. Will all grower members who prepack mushrooms kindly send him two sample cartons, trays, etc., as soon as possible so that he can have a practice lay out of the exhibit. It is also requested that any grower members who propose to start prepacking before 1st October, 1958, should send two samples of cartons, trays or packs.

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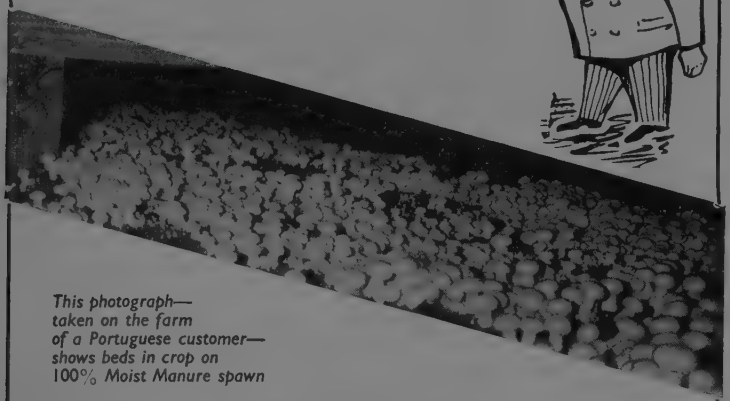

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We have established rapid means of transportation to most European countries, and our resident agents are at the service of mushroom growers who wish to try 100% Spawn.

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BOURNEMOUTH EXHIBITION AND CONFERENCE

In next month's issue the full programme for the Annual Mushroom Industry Exhibition and Conference at Bournemouth, on 1st and 2nd October, will be published in the MGA *Bulletin*.

Included with this issue is a list of Bournemouth Hotels and Boarding Houses in order that members may make their own choice. All members, other than members of the Executive Committee for whom a block booking has already been made, are strongly advised to book their accommodation as soon as possible as Bournemouth is extremely popular with visitors throughout the month of October.

Members may like to know that the MGA Headquarters will be at the Grand Hotel, Bournemouth (that address is sufficient) and that this hotel can accommodate up to seventy members in addition to the Executive Committee. Special conference terms of 45/- per day plus 10% to cover staff gratuities, are available at this hotel where, on the Wednesday evening a cocktail party will take place and the Mayor of Bournemouth will present the mushroom competition trophies.

From the Ministry of Agriculture, June, 1958.

THE USE OF CHEMICALS BY MUSHROOM GROWERS

The precautions necessary to protect employees in the mushroom-growing industry against the risks of chemical poisoning fall into two categories:

(1) those which are required by the Agriculture (Poisonous Substances) Regulations, 1956 to 1958;

(2) those which are advisable but not prescribed by the Regulations.

Precautions required by the Regulations

Attention is drawn to the following points—

(*a*) a " greenhouse "—Regulation 3 (1)—is defined to include any enclosed building.

(*b*) the Regulations apply only in respect of " workers " as defined in Regulation 3 (1); but anyone working in similar conditions is advised to adopt the same precautions.

(*c*) the protective clothing to be worn for various operations is listed in Part II of the First Schedule to the Regulations (reproduced in simpler form as Appendix A to Leaflet *APS/1). The operations likely to be undertaken by workers employed by mushroom growers appear to be those numbered 1, 2, 3, 7, 8 and 12 in that Schedule.

Voluntary Precautions

Precautions are frequently necessary when using substances not included in the provisions of the Agriculture (Poisonous Substances) Regulations—e.g., malathion and diazinon—within the confined space of mushroom houses.

Where there is risk of inhaling an insecticidal or fungicidal dust, a dust-mask should be worn. The dust should not be handled unnecessarily.

It is very undesirable to inhale aerosol particles of any insecticide. A suitable mask should therefore be worn when there is any risk of inhaling aerosol particles. For short, infrequent exposures, an approved dust-mask will suffice if the filter is replaced from time to time. For longer exposures, an approved respirator is advised. Approved dust-masks and respirators are listed in paragraph 35 of Leaflet APS/1.

Rubber gloves should be worn when measuring aerosol concentrates and any contamination of the skin removed as soon as possible by washing with soap and water. (See paragraph 16 of Leaflet APS/1).

Fuller advice is given in paragraphs 14 to 50 of Leaflet APS/1.

Special advice on the use of DNC (DNOC)

The Ministry recommends that the clothing set out in the right hand column below should be worn during the operations described in the left hand column when DNC (DNOC) is used:

(i) dipping, handling, carrying or stacking away dipped trays	rubber apron, rubber boots, rubber gloves.
(ii) handling, carrying or filling *dry* treated trays	rubber gloves and rubber apron.
(iii) spraying roads, paths, exteriors of sheds, etc.	overall, hood, rubber gloves, rubber boots and either a face-shield or a dust-mask.

High temperatures when using DNC are likely to lead to increased absorption and to make any absorption more dangerous. It is, therefore, important to keep the temperature of houses as low as possible when DNC is being used in them and during the period immediately following use if it is necessary for the houses to be entered. It is recommended that DNC should not be used when the temperature in the houses exceeds 70° F. and that trays or boxes which have been dipped in DNC should be allowed to dry in a free current of air before being placed in a peak-heating room.

NOTE: Whenever poisonous substances are used, **read and follow the maker's instructions carefully.**

*Leaflet APS/1 may be had, on application, from the Ministry of Agriculture, Fisheries and Food, 5/8 St. Andrew's Place, Regents' Park, London, N.W.1.

AREA "A" SETS AN EXAMPLE

Members of the MGA in Area "A"—Kent, Surrey, Sussex, London and Middlesex are specially invited to an area meeting at the Whitehall Restaurant, East Grinstead, Sussex, on Thursday, 24th July, at 6 p.m., when Dr. N. W. Hussey of the Glasshouse Crops Research Institute will give a talk on " Biological Aspects of Fly Control in Mushroom Houses."

At this meeting it is proposed to appoint a new Area Committee to replace the old Kent, Surrey and East Sussex committee which has functioned so well for some years.

It is emphasised that whilst only members within the area concerned will be allowed to have a say in the appointment of the new committee MGA members from all parts are sure of a warm welcome to the meeting proper.

PUBLICITY NEWS

New Chairman of the Publicity Sub Committee is Mr. A. J. Berry of The Dell Mushroom Farm, Reservoir Road, Ruislip Common, Middx., and Mr. T. J. Rudkin of Bletchingley, Surrey is continuing as Vice-Chairman.

Mr. Raymond Thompson of Chichester, as Vice-Chairman of the Executive Committee has rejoined the Publicity Committee as an *ex officio* member and Mr. G. W. Baker of Oxted, no longer a member of the Executive Committee has consented, under pressure, to be a co-opted member of the Publicity Committee of which, last year, he was Chairman. Mr. Bleazard, Chairman of the Executive Committee is another *ex officio* member of the Publicity Committee as is Mr. F. L. Filmer, Hon. Treas. to the Association.

This Committee met twice last month and publicity matters discussed included a number of suggestions by Mr. Guy Reed of Albion Publicity. These included an idea to entertain and interest women journalists, a competition for leading chefs, the possible production of a new book on mushroom matters, a school essay competition, a competition for cookery demonstrators in conjunction with the Gas and or Electricity Boards and a campaign by the Association to persuade retailers to publicise the sale of mushrooms in units of $\frac{1}{2}$ lb. instead of $\frac{1}{4}$ lb.

DID YOU KNOW?

That a number of mushroom growers have for some time co-operated in carrying out experiments and they have no decided to centralise their operations. For this purpose they have taken over the old established Company known as White Queen Ltd.

That a British Association of Consultants in Agriculture and Horticulture has been formed and the address is:—The Horticultural Advisory Bureau, Thaxted, Essex. Chairman is Mr. B. S. Furneaux, M.Sc., Dip. Agric. (Wye), F.G.S., and Dr. W. E. Shewell-Cooper, M.B.E., N.D.H., Dip. Hort. (Wye), F.L.S., F.R.S.L., is the Hon. Secretary. Mr. F. C. Atkins, Chairman of Noble Mushrooms Ltd., Yaxley, Peterborough, has joined the Association as advisor on mushroom matters. A communication from the Association rightly points out that "There are a number of aspects of agricultural advisory work in which the NAAS cannot, or would prefer not, to be engaged," siting as such examples, where commercial transactions are involved, litigation, public enquiries and so on.

That over production of mushrooms in New South Wales, Australia, has set the canneries there working to capacity but a surplus is expected (says *The Grower*).

That, according to the *Nursery World*, there was published, in 1916, "A Short Treatise on Systematic Home Economics" by Rosemary Thompson, which quoted mushrooms as being obtainable at 6d. per lb., apples at 2d. per lb. and tea 2/- per lb.

Writing in *Popular Gardening*, H. Parsons, N.D.H., extolls the virtues of mushroom compost as a mulch, saying "With the large increase to-day in Mushroom cultivation there are, in many localities, opportunities for buying cheaply, sterilised spent Mushroom compost, a first-class material, but you must insist on being supplied with the compost from which the casing soil has been removed. The correct material is weed free, clean and easy to handle, with no unpleasant odour, and will rot down by the end of the summer to supply the soil with much needed humus." The writer goes on to advocate its use, spread between the rows, of Brassicas, Dwarf Beans, Peas, Sweet Corn, Leeks, Carrots, Beetroot, Turnips and Celery, two or three inches thick.

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*Amounts collected by spawn merchants are not for publication.

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Shirley Organics Ltd., Vicarage Wharf, Battersea, S.W.11 (activators)	25	0	0
D. C. Bushell & Co. Ltd., Sandhurst, Camberley, Surrey (manure merchants)	10	10	0
Thos. Elliott Ltd., Eagle Mills, New Church Road, S.E.5 (manure, activators, sundries)	10	10	0
Stable Manures Ltd., Newmarket and Worthing	40	0	0
Arthur Coomer Ltd., Grove Road, Farlington, Portsmouth	10	10	0

LARGE CROWD AT RESEARCH STATION

Between 170 and 180 members of the MGA attended the special "Open Day" for mushroom growers at the Glasshouse Crops Research Institute, Littlehampton, on Thursday, 12th June.

The large crowd was warmly welcomed by Mr. T. Ainslie Robertson, Chairman of the GCRI and by Mr. F. W. Toovey, Director of the Institute. The latter, who said how pleased he was to see that such a large number of growers had responded to the invitation, said that some growers present might think that the buildings were "a bit elaborate" but the needs of research were exacting and first-class buildings were essential. The work had been carried out in close liason with the MGA Research Committee. The research organisation at Littlehampton was better than anywhere else in the world, judging by what he himself had seen in France and in the U.S.A., and what he had read about in other parts. Miss D. G. Gandy, Mr. P. B. Flegg, Dr. N. W. Hussey and Mr. I. J. Wyatt gave short accounts of the work they were each carrying out at the Institute.

Later the company toured the buildings, including the laboratory, the new growing sheds, the old Cheshunt hut and the composting shed.

Tea was served in a large marquee.

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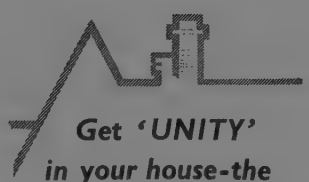

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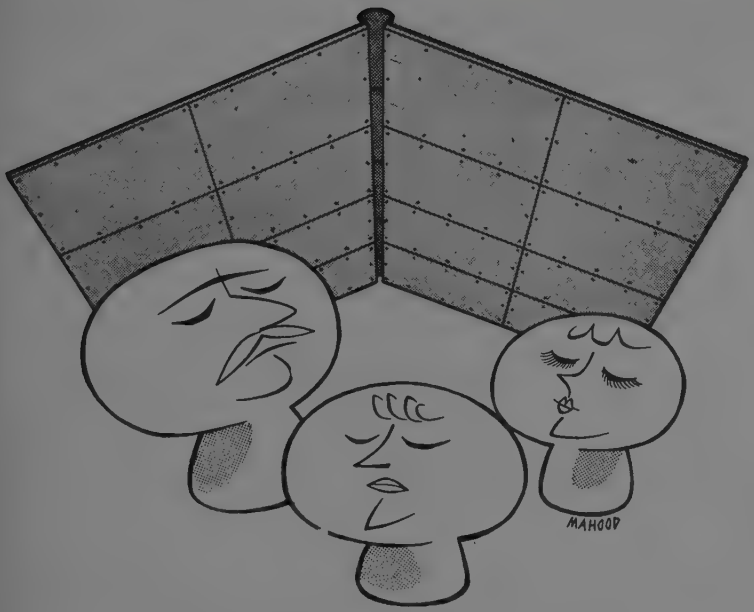

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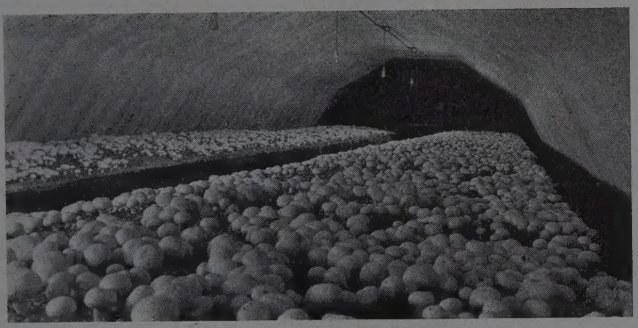

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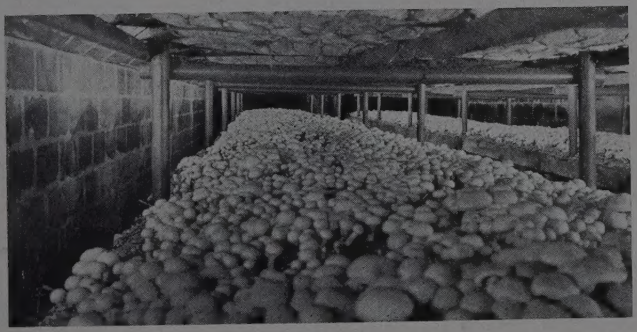

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